

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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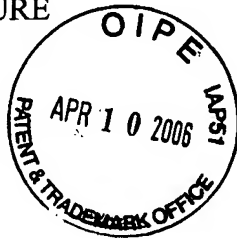
Applicant: Qing Ma

Title: DIRECT BUILD-UP LAYER ON AN ENCAPSULATED DIE PACKAGE HAVING A
MOISTURE BARRIER STRUCTURE

Docket No.: 884.803US2

Filed: February 9, 2004

Examiner: Roy K. Potter



Serial No.: 10/774,923

Due Date: April 6, 2006

Group Art Unit: 2822

MS Appeal Brief - Patents

Commissioner for Patents

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(GENERAL)



EXPEDITED PROCEDURE – EXAMINING GROUP 2822

S/N 10/774,923

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant:	Qing Ma	Examiner:	Roy K. Potter
Serial No.:	10/774,923	Group Art Unit:	2822
Filed:	February 9, 2004	Docket No.:	884.803US2
Title:	DIRECT BUILD-UP LAYER ON AN ENCAPSULATED DIE PACKAGE HAVING A MOISTURE BARRIER STRUCTURE		
Customer Number:	21186		

APPEAL BRIEF UNDER 37 CFR § 41.37

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Sir:

The Appeal Brief is presented in support of the Notice of Appeal to the Board of Patent Appeals and Interferences, filed February 6, 2006, from the Final Rejection of claims 20 and 29 of the above-identified Application, as set forth in the Final Office Action mailed on October 6, 2005.

Pursuant to 37 C.F.R. 41.37(a), this Appeal Brief is submitted singly. The Commissioner of Patents and Trademarks is hereby authorized to charge Deposit Account No. 19-0743 in the amount of \$500.00 which represents the requisite fee set forth in 37 C.F.R. § 41.20(b)(2). The Appellants respectfully request reconsideration and reversal of the Examiner's rejections of the pending claims.

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APPELLANTS' BRIEF ON APPEAL

TABLE OF CONTENTS

	<u>Page</u>
<u>1. REAL PARTY IN INTEREST</u>	2
<u>2. RELATED APPEALS AND INTERFERENCES</u>	3
<u>3. STATUS OF CLAIMS</u>	4
<u>4. STATUS OF AMENDMENTS</u>	5
<u>5. SUMMARY OF CLAIMED SUBJECT MATTER</u>	6
<u>6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL</u>	7
<u>7. ARGUMENT</u>	8
<u>8. SUMMARY</u>	12
<u>CLAIMS APPENDIX</u>	13
<u>EVIDENCE APPENDIX</u>	18
<u>RELATED PROCEEDINGS APPENDIX</u>	19

1. REAL PARTY IN INTEREST

The real party in interest of the above-captioned Application is the Assignee, Intel Corporation.

2. RELATED APPEALS AND INTERFERENCES

In accordance with 37 CFR §41.37(c)(1)(ii) requiring identification of all other appeals and interferences which would have any bearing on the Board's Decision in the present Appeal, to the best knowledge of Appellant, there have not been and are not any other Appeals, and no Interferences, based on the subject application.

3. STATUS OF THE CLAIMS

In accordance with 37 CFR § 41.37(c)(1)(iii) requiring a statement of the status of all claims, pending and cancelled, Appellant submits the following:

Claims 1-4, 5-19, and 20-34 have been advanced during the prosecution history of the application. Claims 5-19 were canceled. Claims 1-4 were withdrawn from consideration under a Restriction Requirement. Claims 1-4 and 20-34 are therefore pending.

Claims 20 and 29 stand finally rejected under 35 USC §102.

Claims 21-28 and 30-34 have been objected to as being dependent upon a rejected base claim.

Claims 20 and 29 have been rejected and/or have been given a final rejection, and accordingly, the jurisdictional prerequisite under 37 CFR §1.191 for Appeal from the Decision of the Examiner to the Board of Patent Appeals and Interferences has been met. In view of the requirements under 37 CFR §1.191 that an Appeal in an application or reexamination preceding identify, when the Appeal is taken, all rejected claim or claims which are to be appealed and proposed to be contested, Appellant respectfully submits that all presently rejected claims (Claims 20 and 29) are appealed.

4. STATUS OF AMENDMENTS

The following is a statement of the status of any Amendments filed subsequent to final rejection (as required by 37 CFR §41.37(c)(1)(iv)).

No amendments have been made subsequent to the Final Office Action dated October 6, 2005.

5. SUMMARY OF CLAIMED SUBJECT MATTER

A concise explanation of the claimed embodiments defined in the claims in the Appeal, which refers to the specification by page and line number and to the drawings by reference characters (as required by 37 CFR §41.37(c)(1)(v)) is detailed as follows.

A claimed embodiment includes a method comprising forming a barrier structure proximate a substrate edge. Reference can be made to FIGs. 3O and 3P and to independent claim 20 for illustration of a summarized embodiment.

The claimed embodiment includes a method of fabricating a moisture barrier comprising:

providing a substrate (304) having a surface and at least one edge (312);

disposing a first dielectric material layer (318) on at least a portion of said substrate surface; and

forming at least one first barrier structure (382) on said first dielectric material layer (318) proximate said at least one substrate edge (312).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

In accordance with 37 CFR §41.37(c)(1)(vi)), the following is a concise statement of each ground of rejection presented for review.

- 1) Whether claims 20 and 29 are anticipated under 35 USC § 102(b) as being anticipated by Higuchi et al. (U.S. 5,311,500), where Higuchi et al. does not teach a barrier structure proximate a substrate edge.

7. ARGUMENT

The contentions of Appellant with respect to the issue presented for review in the foregoing Item 6 and the basis therefor, with citations of the authorities, statutes, and parts of the record relied on, (as required by 37 CFR §1.1 92(c)(8)), are provided as follows, with each issue being treated under a separate heading.

For each rejection under 35 USC § 102(b), Appellant's argument specifies (as required by 37 CFR 41.37(c)(1)(vii)) the errors in the rejection and why the rejected claims are patentable under 35 USC §102(b), including any specific limitations in the rejected claims which are not described in the prior art relied upon in the rejection.

All descriptions of Appellant's disclosed and claimed embodiments, and all descriptions and rebuttal arguments regarding the applied references, as previously submitted by Appellant in any form, are repeated and incorporated herein by reference. Further, all Office Action statements regarding the objections and rejections are respectfully traversed. Further, Appellant submits the following.

A) The Applicable Law

1) §102. Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless--

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States

M.P.E.P. §2131, 8th Ed., Rev. 1 Anticipation – Application of 35 U.S.C. § 102(b)

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

[A] claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) "The identical invention must be shown in as complete detail as is contained in the ... claim."

Richardson v. Suzuki Motor Co. 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Further, "the prior art reference must be enabling, thus placing the allegedly disclosed matter in the possession of the public." In re Brown, 141 USPQ 245, 249 (CCPA 1964). In particular, Brown repeats old law (1890) that

the description must place the invention in the possession of the public as fully as if the art or instrument itself had been practically and publicly employed. In order to accomplish this it must be so particular and definite that from it alone, without experiment or the exertion of his own inventive skill, any person versed in the art to which it appertains could construct and use it.

Id. at 249.

2) **§112. Conditions for patentability; Claim terminology**

M.P.E.P. § 2173.01 Claim terminology

A fundamental principle contained in 35 U.S.C. 112, second paragraph is that Appellants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as any special meaning assigned to a term is clearly set forth in the specification ... a claim may not be rejected solely because of the type of language used to define the subject matter for which patent protection is sought.

M.P.E.P. § 2111.01 Plain meaning

[T]he words of the claim must be given their plain meaning unless Appellant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)

B) **ARGUMENT: The Claims are not Anticipated by Higuchi et al.**

Appellant has selected a phrase that means "near, but not at the edge". This phrase is "proximate said packaging material edge". Each usage of this terminology and each illustration in Appellant's disclosure is consistent with "not at the edge, but next or following". Appellant may be his own lexicographer, which Appellant has done in the instant patent application.

A recent *En Banc* decision by the Federal Circuit emphasizes the quality of intrinsic evidence as the first recourse to determine the scope of what is claimed.

Quoting M.P.E.P. § 2111.01, it states

The meaning of a particular claim term may be defined by implication, that is, *according to the usage of the term in context in the specification*. See *Phillips v. AWH Corp.*, ___ F.3d ___, 75 USPQ2d 1321 (Fed. Cir. 2005) (en banc)

(M.P.E.P. § 2111.01, 8th Ed., Rev. 4. Emphasis added). Throughout the specification, the intrinsic evidence of the claim term “proximate” is illustrated as meaning “near, but not at the edge”.

The Office Action asserts that the moisture barrier 5a of Higuchi et al. “is formed on the dielectric layer proximate to the edge of the substrate.” (Office Action at page 2). Appellant respectfully asserts that Higuchi’s moisture barrier 5a is everywhere exactly “at the edge” of the substrate. This means Higuchi’s moisture barrier 5a cannot be anywhere “proximate” as Appellant has selected to use this word. Claim 20 requires the limitation of

forming at least one first barrier structure on said first dielectric material layer *proximate* said at least one substrate edge.

Thus, the intrinsic evidence in Appellant’s disclosure reveals that “proximate” is never exactly at the edge, whereas Higuchi’s teachings are always exactly at the edge.

The M.P.E.P. also states (as the rest of the above-cited paragraph) that the “specification should also be relied on for more than just explicit lexicographer or clear disavowal of claim scope to determine the meaning of a claim term when Appellant acts as his or her own lexicographer.” (M.P.E.P § 2111.01, citations omitted).

Appellant first respectfully asserts that the “Field of the Invention” “relates to apparatus and processes for packaging microelectronic dice.” (Instant application at page 1). But Higuchi explicitly states the field of his invention “relates to a magneto-optical disk for large-capacity information storage” (Higuchi at column 1, lines 11-12).

Accordingly, the fields of the invention are disparate and the term “proximate” cannot be applied to Higuchi in the same meaning as in the instant claims.

Appellant second respectfully asserts that the Specification is consistent in placing the moisture barrier inside the structure such that “proximate said at least one substrate edge” is always internal to the structure, and next preceding the edge, but it is not external at the edge itself as exclusively shown in Higuchi. And by applying the first principal stated in M.P.E.P. § 2111.01, Higuchi’s disclosure as useful to define “proximate” is disqualified in any event because it is from a disparate field of invention. Withdrawal of the rejections is respectfully requested.

Appellant also respectfully asserts that, Appellant’s specification being internally consistent to define as its own lexicographer the meaning of “proximate”, nowhere can the term “promixate” (Proximate 2. very near: close) mean “exactly at”. And “exactly at” is the only teaching of Higuchi. Reversal of the rejections is respectfully requested.

8. SUMMARY

Regarding the rejection of claims over 35 U.S.C. § 102(b), the moisture barrier being proximate the substrate edge, but not exactly at the substrate edge, as proved by intrinsic evidence of the instant disclosure, cannot be construed as the structure depicted by Higuchi et al.

Appellant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Appellant's attorney John Greaves at 801-278-9171, or the below-signed attorney at (612) 349-9592, to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

QING MA

By his Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER &
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Date April 6, 2006

By Ann M. McCrackin

Ann M. McCrackin

Reg. No. 42,858

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Chris Hammond

Name

Chris Hammond

Signature

CLAIMS APPENDIX

1. (Withdrawn) A moisture barrier, comprising:
a packaging material having a surface and at least one edge;
a first dielectric material layer disposed on at least a portion of said packaging material surface; and
at least one first barrier structure disposed on said first dielectric material layer proximate said packaging material edge.
2. (Withdrawn) The moisture barrier of claim 1, further including at least one additional dielectric material layer disposed over said at least one first barrier structure and said first dielectric material layer.
3. (Withdrawn) The moisture barrier of claim 2, further including at least one second barrier structure contacting said at least one first barrier structure, wherein at least a portion of said at least one second barrier structure extends through said at least one additional dielectric material layer.
4. (Withdrawn) The moisture barrier of claim 1, wherein said packaging material comprises an encapsulation material.
- 5-19. (Canceled).
20. (Rejected) A method of fabricating a moisture barrier, comprising:
providing a substrate having a surface and at least one edge;
disposing a first dielectric material layer on at least a portion of said substrate surface; and
forming at least one first barrier structure on said first dielectric material layer proximate said at least one substrate edge.

21. (Objected to) The method of claim 20, further including disposing at least one additional dielectric material layer over said at least one first barrier structure and said first dielectric material layer.

22. (Objected to) The method of claim 21, further including contacting at least one second barrier structure with said at least one first barrier structure, wherein at least a portion of said at least one second barrier structure extends through said at least one additional dielectric material layer.

23. (Objected to) The method of claim 20, wherein said forming said at least one first barrier structure comprises:

- depositing a seed layer on said first dielectric material layer;
- patterning a resist layer on said metal seed layer to define at least one elongate opening having a desired pattern for said at least one first barrier structure;
- plating a metal on said seed layer within said at least one elongate opening;
- removing said resist layer;
- removing a portion of said seed layer not having said metal plated thereon.

24. (Objected to) The method of claim 23, further comprising:

- disposing a second dielectric material layer on said first dielectric material and said at least one first barrier structure;

- forming at least one trench through said second dielectric material layer to expose a portion of said at least one first barrier structure; and

- forming at least one second barrier structure on said second dielectric material layer, wherein a portion of said second barrier structure extends into said at least one trench to contact said at least one first barrier structure.

25. (Objected to) A method of fabricating a microelectronic package, comprising:

providing at least one microelectronic die having an active surface and at least one side;

providing a packaging material adjacent said at least one microelectronic die side, wherein said packaging material provides a surface substantially planar to said microelectronic die active surface;

disposing a first dielectric material layer on at least a portion of said microelectronic die active surface and said package material surface;

forming at least one first via through said first dielectric material layer to expose a portion of said microelectronic die active surface;

forming at least one first conductive trace on said first dielectric material layer, wherein a portion of said first conductive trace extends into said at least one first via to electrically contact said microelectronic die active surface; and

forming at least one first barrier structure on said first dielectric material layer proximate an edge of said package material surface.

26. (Objected to) The method of claim 25, wherein said forming said at least one conductive trace and said forming at least one first barrier structure comprises simultaneously forming said at least one first conductive trace and said at least one first barrier structure.

27. (Objected to) The method of claim 26, wherein said simultaneously forming said at least one first conductive trace and at least one first barrier structure comprises:

depositing a seed layer on said first dielectric material layer which extends into said first via;

patterning a resist layer on said seed layer to define at least one opening having a desired pattern for said at least one first conductive trace and at least one elongate opening having a desired pattern for said at least one first barrier structure;

plating a metal on said seed layer within said at least one opening and said at least one elongate opening;

removing said resist layer;

removing a portion of said seed layer not having said metal plated thereon.

28. (Objected to) The method of claim 27, further comprising:

disposing a second dielectric material layer on said first dielectric material, said at least one first conductive trace, and said at least one first barrier structure;

forming at least one second via through said second dielectric material layer to expose a portion of said at least one first conductive trace;

forming at least one second conductive trace on said first dielectric material layer which extends into said at least one second via to electrically contact said at least one conductive trace;

forming at least one trench through said second dielectric material layer to expose a portion of said at least one first barrier structure; and

forming at least one second barrier structure on said second dielectric material layer which extends into said at least one trench to contact said at least one first barrier structure.

29. (Rejected) A method of fabricating a moisture barrier, comprising:

disposing a first dielectric material layer on at least a portion of a substrate surface, the substrate including a surface and at least one edge; and

forming at least one first barrier structure on said first dielectric material layer proximate said at least one substrate edge.

30. (Objected to) The method of claim 29, further including disposing at least one additional dielectric material layer over said at least one first barrier structure and said first dielectric material layer.

31. (Objected to) The method of claim 29, further including contacting at least one second barrier structure with said at least one first barrier structure, wherein at least a

portion of said at least one second barrier structure extends through said at least one additional dielectric material layer.

32. (Objected to) The method of claim 31, further including contacting at least one additional barrier structure with said at least one second barrier structure.

33. (Objected to) The method of claim 29, further including disposing from one to four dielectric material layers over said at least one first barrier structure and said first dielectric material layer.

34. (Objected to) The method of claim 29, further including disposing from one to three additional barrier structures over said at least one first barrier structure and said first dielectric material layer.

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STRUCTURE

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

No Related Proceedings are known to the Appellants' Representative.